

cont'd
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a2
oxidizing the crystallized semiconductor film to be active layers of said thin film transistors at a pressure higher than 1 atm in a temperature lower than a strain point of said glass substrate.

5. (Amended) A method according to claim 1, wherein said [oxidizing the semiconductor film is performed in a] temperature is in a range of 500 to 650°C.

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9. (Amended) A method of manufacturing a semiconductor device having a plurality of thin film transistors, comprising the steps of:

forming a semiconductor film comprising silicon on an insulating surface;
crystallizing said semiconductor film; and

oxidizing the crystallized semiconductor film to be active layers of said thin film transistors at a pressure higher than 1 atm in a temperature of 500 to 650°C.

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13. (Amended) A method according to claim 9, wherein said oxidizing [the semiconductor film is performed in a temperature of 500 to 650°C] step is a pyrogenic oxidation process.

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17. (Amended) A method of manufacturing a semiconductor device having a plurality of thin film transistors, comprising the steps of:

forming a semiconductor film comprising silicon over an alkali-free glass substrate;
crystallizing said semiconductor film; and

oxidizing the crystallized semiconductor film to be active layers of said thin film transistors at a pressure higher than 1 atm in a temperature lower than a strain point of said glass substrate.

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21. (Amended) A method according to claim 17, wherein said [oxidizing the semiconductor film is performed in a] temperature is in a range of 500 to 650°C.

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25. (Amended) A method of manufacturing a semiconductor device having a plurality of thin film transistors, comprising the steps of:

forming a semiconductor film comprising silicon over a glass substrate;
crystallizing said semiconductor film;
forming [a gate] an insulating film adjacent to said crystallized semiconductor film by plasma CVD; and
forming [a] gate electrodes adjacent to said [gate] insulating film,
wherein said method further comprises a step of oxidizing the crystallized semiconductor film to be active layers of said thin film transistors at a pressure higher than 1 at in a temperature lower than a strain point of said glass substrate.

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27. (Amended) A method according to claim 25, wherein said [semiconductor device comprising at least one top gate type thin film transistor] gate electrodes are formed over said active layers.

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29. (Amended) A method according to claim 25, wherein said [oxidizing the semiconductor film is performed in a] temperature is in a range of 500 to 650°C.

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33. (Amended) A method of manufacturing a semiconductor device having a plurality of thin film transistors, comprising the steps of:

forming a semiconductor film comprising silicon on an insulating surface;
crystallizing said semiconductor film;
forming [a gate] an insulating film adjacent to said crystallized semiconductor film by plasma CVD; and
forming [a] gate electrodes adjacent to said [gate] insulating film,

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wherein said method further comprises a step of oxidizing the crystallized semiconductor film to be active layers of said thin film transistors at a pressure higher than 1 atm in a temperature of 500 to 650°C.

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35. (Amended) A method according to claim 33, wherein said [semiconductor device comprising at least one top gate type thin film transistor] gate electrodes are formed over said active layers.

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37. (Amended) A method according to claim 33, wherein said oxidizing [the semiconductor film is performed in a temperature of 500 to 650°C] step is a pyrogenic oxidation process.

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41. (Amended) A method of manufacturing a semiconductor device having a plurality of thin film transistors, comprising the steps of:

forming a semiconductor film comprising silicon over an alkali-free glass substrate;

crystallizing said semiconductor film;

forming [a gate] an insulating film adjacent to said crystallized semiconductor film by plasma CVD; and

forming [a] gate electrodes adjacent to said [gate] insulating film,

wherein said method further comprises a step of oxidizing the crystallized semiconductor film to be active layers of said thin film transistors at a pressure higher than 1 atm in a temperature lower than a strain point of said glass substrate.

a14
43. (Amended) A method according to claim 41, wherein said [semiconductor device comprising at least one top gate type thin film transistor] gate electrodes are formed over said active layers.

45. (Amended) A method according to claim 41, wherein said [oxidizing the semiconductor film is performed in a] temperature is in a range of 500 to 650°C.

49. (Amended) A method of manufacturing a semiconductor device having a plurality of thin film transistors, comprising the steps of:

forming a semiconductor film comprising silicon over a glass substrate;

crystallizing said semiconductor film; and

[heating the crystallized semiconductor film in an oxidizing atmosphere at a pressure higher than 1 atm] oxidizing the crystallized semiconductor film to be active layers of said thin film transistors at a pressure of 1 to 15 atms.

wherein said oxidizing the semiconductor film is performed in a temperature lower than a strain point of said glass substrate.

50. (Amended) A method according to claim 49, wherein said [pressure is in a range of 1 to 15 atms] strain point of said substrate is 750°C or less.

52. (Amended) A method according to claim 49, wherein said [heating the semiconductor film is performed in a] temperature is in a range of 500 to 650°C.

56. (Amended) A method of manufacturing a semiconductor device having a plurality of thin film transistors, comprising the steps of:

forming a semiconductor film comprising silicon on an insulating surface;

crystallizing said semiconductor film; and

[heating the crystallized semiconductor film in an oxidizing atmosphere at a pressure higher than 1 atm] oxidizing the crystallized semiconductor film to be active layers of said thin film transistors at a pressure of 1 to 15 atms.

wherein said oxidizing the semiconductor film is performed in a temperature of 500 to 650°C.

57. (Amended) A method according to claim 56, wherein said [pressure is in a range of 1 to 15 atms] crystallizing step is performed at a temperature of 600°C.

59. (Amended) A method according to claim 56, wherein said [heating the semiconductor film is performed in a temperature of 500 to 650°C] oxidizing step is a pyrogenic oxidation process.

63. (Amended) A method of manufacturing a semiconductor device having a plurality of thin film transistors, comprising the steps of:

forming a semiconductor film comprising silicon over an alkali-free glass substrate;
crystallizing said semiconductor film; and

[heating the crystallized semiconductor film in an oxidizing atmosphere at a pressure higher than 1 atm] oxidizing the crystallized semiconductor film to be active layers of said thin film transistors at a pressure of 1 to 15 atms.

wherein said oxidizing the semiconductor film is performed in a temperature lower than a strain point of said glass substrate.

64. (Amended) A method according to claim 63, wherein said [pressure is in a range of 1 to 15 atms] strain point of said substrate is 750°C or less.

66. (Amended) A method according to claim 63, wherein said [heating the semiconductor film is performed in a] temperature is in a range of 500 to 650°C.

70. (Amended) A method of manufacturing a semiconductor device having a plurality of thin film transistors, comprising the steps of:

forming a semiconductor film comprising silicon over a glass substrate;
crystallizing said semiconductor film;
forming [a gate] an insulating film adjacent to said crystallized semiconductor film; and
forming [a] gate electrodes adjacent to said [gate] insulating film,
wherein said method further comprises a step of [heating the crystallized semiconductor film in an oxidizing atmosphere at a pressure higher than 1 atm] oxidizing the crystallized semiconductor film to be active layers of said thin film transistors at a pressure of 1 to 15 atms, and
wherein said oxidizing the semiconductor film is performed in a temperature lower than a strain point of said glass substrate.

71. (Amended) A method according to claim 70, wherein said [pressure is in a range of 1 to 15 atms] strain point of said substrate is 750°C or less.

72. (Amended) A method according to claim 70, wherein said [semiconductor device comprising at least one top gate type thin film transistor] gate electrodes are formed over said active layers.

74. (Amended) A method according to claim 70, wherein said [heating the semiconductor film is performed in a] temperature is in a range of 500 to 650°C.

78. (Amended) A method of manufacturing a semiconductor device having a plurality of thin film transistors, comprising the steps of:

forming a semiconductor film comprising silicon on an insulating surface;
crystallizing said semiconductor film;
forming [a gate] an insulating film adjacent to said crystallized semiconductor film; and
forming [a] gate electrodes adjacent to said [gate] insulating film,

wherein said method further comprises a step of [heating the crystallized semiconductor film in an oxidizing atmosphere at a pressure higher than 1 atm] oxidizing the crystallized semiconductor film to be active layers of said thin film transistors at a pressure of 1 to 15 atms, and
wherein said oxidizing the semiconductor film is performed in a temperature of 500 to 650°C.

79. (Amended) A method according to claim 78, wherein said [pressure is in a range of 1 to 15 atms] crystallizing step is performed at a temperature of 600°C.

80. (Amended) A method according to claim 78, wherein said [semiconductor device comprising at least one top gate type thin film transistor] gate electrodes are formed over said active layers.

82. (Amended) A method according to claim 78, wherein said [heating the semiconductor film is performed in a temperature of 500 to 650°C] oxidizing step is a pyrogenic oxidation process.

86. (Amended) A method of manufacturing a semiconductor device having a plurality of thin film transistors, comprising the steps of:

forming a semiconductor film comprising silicon over an alkali-free glass substrate;

crystallizing said semiconductor film;

forming [a gate] an insulating film adjacent to said crystallized semiconductor film; and

forming [a] gate electrodes adjacent to said [gate] insulating film,

wherein said method further comprises a step of [heating the crystallized semiconductor film in an oxidizing atmosphere at a pressure higher than 1 atm] oxidizing the crystallized semiconductor film to be active layers of said thin film transistors at a pressure of 1 to 15 atms, and
wherein said oxidizing the semiconductor film is performed in a temperature lower than a strain point of said glass substrate.

87. (Amended) A method according to claim 86, wherein said [pressure is in a range of 1 to 15 atm] strain point of said substrate is 750°C or less.

88. (Amended) A method according to claim 86, wherein said [semiconductor device comprising at least one top gate type thin film transistor] gate electrodes are formed over said active layers.

90. (Amended) A method according to claim 86, wherein said [heating the semiconductor film is performed in a] temperature is in a range of 500 to 650°C.

Kindly add new claims 94-105 as follows:

--94. A method according to claim 1, wherein said strain point of said substrate is 750°C or less. ✓

95. A method according to claim 17, wherein said strain point of said substrate is 750°C or less. ✓

96. A method according to claim 25, wherein said strain point of said substrate is 750°C or less. ✓

97. A method according to claim 41, wherein said strain point of said substrate is 750°C or less. ✓

98. A method according to claim 1, wherein said oxidizing step is a pyrogenic oxidation process.

99. A method according to claim 17, wherein said oxidizing step is a pyrogenic oxidation process.

100. A method according to claim 25, wherein said oxidizing step is a pyrogenic oxidation process.

101. A method according to claim 41, wherein said oxidizing step is a pyrogenic oxidation process.

102. A method according to claim 49, wherein said oxidizing step is a pyrogenic oxidation process.

103. A method according to claim 63, wherein said oxidizing step is a pyrogenic oxidation process.

104. A method according to claim 70, wherein said oxidizing step is a pyrogenic oxidation process.

105. A method according to claim 86, wherein said oxidizing step is a pyrogenic oxidation process. --

REMARKS

The Examiner's Official Action dated January 4, 2000 has been received and its contents carefully noted. Claims 1-93 were pending in the present application prior to the above amendments. Claims 1, 5, 9, 13, 17, 21, 25, 27, 29, 33, 37, 35, 41, 43, 45, 49, 50, 52, 56, 57, 59, 63, 64, 66, 67,